THE

Boat-Swains Art:

OR THE

Compleat Boat-Swain.

Wherein is ſhewed a true Proportion for the Maſting, Yarding, and Rigging of any Ship, whoſe Length, Breadth, and Depth is known: With Rules for the Sizes and Lengths of all ſorts of Rigging that belongs to any SHIP.

Alſo the Uſe of an Opening Scale, that if the Length of the Main Maſt be put upon it with a Pair of Compaſſes, you may meaſure upon the Scale the Lengths and Thickneſs of all the other Maſts and Yards; and alſo the Sizes, the Lengths, and the Number of Fathoms of every Size for the Rigging of any SHIP, without altering the Scale.

Alſo here is added a Plain and Eaſy RULE for Rigging any SHIP by the Length of its own *Maſts* and *Yards*.

By HENRY BOND, Teacher of *Navigation*.

The SCALE is made in Braſs or Wood, by *Walter* and *John Henſhaw* near the *Hermitage-Bridge*.

London, Printed for *Richard Mount* at the *Poſtern* on *Tower-Hill*, 1699.

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To the READER.

COurteous and Judicious Reader; Thou haſt here preſented to thee an exact Method and Direction for the Maſting, Yarding *and* Rigging *of any* Ship *whatſoever: All that is expected from thee, is but thy Acceptance, and a Charitable Cenſure; both which out of doubt thou wilt freely grant: The main End that is intended in it, is for the Help and Direction of Young Men that are willing to have ſome Ground for what they ſhall undertake in this Kind, and not to go on hand over head. If any ſhall reap Benefit by it, (as out of doubt many will) the Author hath his Deſire.*

Vale.

A Table of the Length and Thickneſs of the Maſts *and* Yards *of a* Ship *that is* 75 *Foot by the* Keel, 29½ *Foot at the* Beam, *and* 13 *Foot in* Hold, *which is of the Burden of* 300 *Tun.*

	Length in Feet.	*Thickneſs in Inches.*
THE Sprit-ſail Top-ſail-yard	14	4
The Fore Top-gallant-yard, & the Sprit-ſail Top-maſt	16	5
The Main Top-gallant-yard	18	6
The Fore Top-gallant-maſt	19	6
The Mizen Top-ſail-yard	20	6
The Main Top-gallant-maſt	21	7
The Mizen Top-maſt	27	8
The Fore Top-ſail-yard	31	9
The Main Top-ſail-yard, 11 Inches, and Croſs-jack-yard	36	7½
The Fore Top-maſt	37	13
The Main Top-maſt	42	14
The Sprit-ſail-yard	50	16
The Mizen Maſt	52	17
The Mizen Yard	51	16
The Fore Yard	62	20
The Bowſprit	66	22
The Main Yard	74	24
The Fore Maſt	75	25
The Main Maſt	84	28

A Table of the Names, the Sizes, the Number, and the Lengths of each Rope, of Rigging, belonging to the fore-propounded Ship.

1. *Cordage of 1 Inch $\frac{1}{10}$ Parts.*

		Fa.	Fa.
2	Fore Top-gallant Braces	25	50
4	Fore Top-gallant Bowling Bridles	4	4
2	Fore Top-gallant Lifts	22	44
8	Main Top-gallant Lanniards	$1\frac{1}{2}$	12
4	Main Top-gallant Bowling Bridles	1	4
1	Main Flag Staff-ſtay	11	11
8	Mizen Top-maſt Lanniards	$1\frac{1}{2}$	12
1	Fall of the Mizen Top-ſail Cranlines	36	36
1	Mizen Top-ſail Bowling	$12\frac{1}{2}$	25
2	Mizen Top-ſail Braces	17	34
34			232

2. *Cordage of 1 Inch $\frac{3}{10}$ Parts.*

8	Lanniards of the Sprit-ſail Top maſt	$1\frac{1}{2}$	12
2	Falls of the Sprit-ſail Top-maſt Tackles	6	12
1	Fall of the Sprit-ſail Cranlines	18	18
1	Sprit-ſail Top-ſail Halliard	6	6
2	Sprit-ſail Top-ſail Lifts	5	10
2	Pennants of the Sprit-ſail Top-ſail Braces	2	2
2	Sprit-ſail Top-ſail Braces	10	20
2	Sprit-ſail Top-ſail Cluelines	10	20
2	Fore Top-maſt Tacklefalls	$13\frac{1}{2}$	27
2	Falls of the Fore Top-gallant Back-ſtays	18	36
1	Fore Top-gallant Halliard	32	32
2	Pennants of the Fore Top-gallant Braces	3	3
2	Fore Top-gallant Bowlings	24	48
2	Fore Top-gallant Cluelines	22	44
6	Fore Top-gallant Lanniards	$1\frac{1}{2}$	9
2	Falls of the Main Top-gallant Tackles	7	14
39			2 Falls

		Fa.	Fa.
2	Falls of the Main Top-gallant Back-ſtays	20	40
2	Main Top-gallant Lifts	24	48
2	Main Top-gallant Braces	28	56
2	Main Top-gallant Bowlings	24	48
8	Mizen Brails	8	64
2	Mizen Top-maſt Tacklefalls	9	18
1	Fall of the Mizen Top-ſail Cranlines	36	36
6	Mizen Top-ſail Bowling Bridles	6	6
2	Pennants of the Mizen Top-ſail Braces	2	2
2	Croſs-jack Braces	20	40
2	Fore Top-ſail Leechlines	10	20
31			691

3. *Cordage of* 1 *Inch* $\frac{8}{10}$ *Parts.*

2	Lanniards of the Sprit-ſail ſtanding Lifts	6	6
4	Fore Martlines Legs	22	22
2	Lanniards of the Holles for the Fore-yard	6	12
8	Lanniards for the Fore Top-maſt Shrouds	2	16
2	Fore Top-ſail Braces	23 $\frac{1}{2}$	47
4	Fore Top-ſail Bowling Bridles	2	8
2	Fore Top-gallant Parrel Ropes	2	2
10	Lanniards of the Main Top-maſt Shrouds	2 $\frac{1}{2}$	25
2	Main Top-ſail Braces	24	48
2	Main Top-ſail Leechlines	12	24
2	Main Top-gallant Cluelines	25	50
2	Pennants of the Main Top-gallant Braces	2	2
10	Lanniards for the Mizen Shrouds	2 $\frac{1}{2}$	25
2	Pennants of the Croſs-jack Braces	3	3
2	Slings for the Croſs-jack-yard	3	3
2	Pennants of the Mizen Top-ſail Cranlines	2	2
1	Mizen Top-ſail Halliard, in three parts	28	28
2	Mizen Top-ſail Cluelines	14	28
61			351

4. Cordage of 2 Inches $\frac{2}{12}$ parts.

		Fa.	Fa.
2	Sprit-ſail Braces	16	32
2	Sprit-ſail Cluelines	11	22
1	Sprit-ſail Buntline in 2 parts	21	21
8	Sprit-ſail Top-maſt Shrouds	3	24
2	Pennants of the Sprit-ſail Top-ſail Tackles	2	2
3	Pennants of the Sprit-ſail Top-ſail Cranlines	8	8
10	Puttocks of the Sprit-ſail Top maſt Shrowds	10	10
2	Sprit-ſail Top-maſt Parrel Ropes	2	2
2	Fore-ſail Martlines Falls	29	58
5	Fore-ſail Buntlines	16	80
2	Fore Braces	15	30
2	Fore Top-ſail Lifts	18	36
2	Falls of the Fore Top-maſt Back-ſtays	$4\frac{1}{2}$	9
2	Pennants of the Fore Top-ſail Braces	3	3
1	Lanniard of the Fore Top-maſt's Stay	5	5
2	Fore Top-ſail Bowlings	26	52
2	Fore Top-ſail Buntlines	10	20
2	Pennants of the Fore Top-gallant Back-ſtays	4	4
1	Fore Top-gallant Tie	$3\frac{1}{2}$	$3\frac{1}{2}$
8	Fore Top-gallant Puttocks	8	8
1	Fore Top-gallant Stay	18	18
1	Fore Top-gallant Top-rope	27	27
6	Fore Top-gallant Shrowds	$3\frac{1}{3}$	2
4	Main-ſail Martlines Legs	32	32
2	Falls of the Main Top-maſt Tackles	$15\frac{1}{2}$	31
2	Lanniards of the Main Top-maſt Back-ſtays	5	10
2	Main Top-ſail Lifts	$24\frac{1}{2}$	49
2	Main Top-ſail Buntlines Falls	$17\frac{1}{2}$	35
2	Main Top-ſail Buntlines Legs	$9\frac{1}{2}$	19
2	Pennants of the Main Top-gallant Tackles	$2\frac{1}{2}$	$2\frac{1}{2}$
2	Pennants of the Main Top-gallant Back-ſtays	4	4
1	Main Top-gallant Halliard	37	37
10	Main Top-gallant Puttocks	13	13

		Fa.	Fa.
1	Main Top-gallant Parrel Ropes	2	2
2	Falls of the Mizen Tackles	16	32
1	Mizen Truſs	12	12
1	Mizen Bowling	5	5
2	Pennants of the Mizen Top-maſt Tackles	2	2
8	Mizen Top-maſt Shrouds	4½	36
1	Mizen Top-maſt Tie	4½	4½
10	Puttocks of the Mizen Top-maſt Shrouds	15	15
2	Mizen Top-maſt Parrel Ropes	2	2
29			838½

5. *Cordage of 2 Inches $\frac{6}{10}$ Parts.*

1	Sprit-ſail Top-maſt Tie	3	3
2	Main-ſail Martlins Falls	32	64
2	Main Braces	24	48
8	Main Top gallant Shrouds	4	32
2	Sprit ſail Garnets	18	36
2	Sprit-ſail Lifts	18	36
2	Pennants of the Sprit-ſail Braces	2	2
2	Sprit-ſail Sheets	17	34
1	Hoſs for the Stay	6	6
2	Fore Top ſail Clue-garnets	15	30
2	Fore-ſail Bowling Bridles	4	4
2	Pennants of the Fore Braces	4	4
1	Lanniard of the Fore Top-maſt Stay	4	4
2	Falls of the Fore Top-maſt running Back-ſtays	17	34
2	Fore Top-maſt Parrel Ropes	3	3
1	Fore Top-maſt Breſt Rope	2	2
6	Main-ſail Buntlines	9	54
1	Main Luff Tackle	8	8
1	Fall of the Main-ſail Buntlines	54	54
1	Main Bowling Tackle	8	8
2	Lanniards of the Main-yard Hoſſes	6	6
2	Falls of the Main Top-maſt running Back-ſtays	19½	39
2	Main Top-maſt Parrel Ropes	4	4

		Fa.	Fa.
1	Main Top-gallant Maſt-Stay	14	14
1	Main Top-gallant Top-Rope	30	30
1	Mizen Tack	2	2
2	Croſs-jack Lifts	15	30
1	Mizen Top-maſt Top-Rope	13	13
16	Lanniards of the Fore-Shrowds	4	64
2	Fore Top-ſail Cluelines	30	60
24			728

6. Cordage of 3 Inches $\frac{1}{2}$ Parts.

1	Sprit-ſail Halliard	17	17
2	Hoſſes for the Sprit-ſail Sheats	3	3
2	Falls of the Boats Tackles for the Fore-maſt	32	64
2	Other Falls	22	44
2	Fore Lifts	20	40
2	Fore Bowlings	15	30
2	Pennants of the Fore Top-maſt Tackles	4	4
2	Pennants of the Fore Top-maſt running Back-ſtays	3	6
8	Fore Top-maſt Shrowds	$6\frac{1}{2}$	52
10	Fore Top-maſt Puttocks	$2\frac{1}{2}$	25
1	Fore Top-maſt Halliard	35	35
2	Falls of the Boats Tackles for the Main-maſt	35	70
2	Other Falls	23	46
2	Main Lifts	24	48
2	Main Clue-garnets	18	36
2	Pennants of the Main Braces	4	4
1	Lanniard of the Main Top-maſt Stay	5	5
1	Main Top-ſail Halliard	44	44
2	Pennants of the Main Top-ſail Braces	3	3
2	Main Top-ſail Bowlings	27	54
6	Main Top-ſail Bowling Bridles	2	12
2	Main Top-ſail Cluelines	35	70
1	Main Top-gallant Tie	4	4
2	Runners of the Mizen Tackles	8	16
1	Mizen Halliard	19	19
1	Mizen Sheat	13	13
63			764

7. *Cordage*

7. *Cordage of* 3 *Inches* $\frac{1}{10}$ *Parts.*

		Fa.	Fa.
2	Sprit-sail Standing-lifts	7	7
1	Fore Top-maſt Stay	$12\frac{1}{2}$	$12\frac{1}{2}$
2	Fore Top-maſt ſtanding Back-ſtays	$15\frac{1}{2}$	31
1	Runner of the Fore Top-ſail Halliards	12	12
20	Lanniards of the Main Shrowds	4	80
2	Main Bowlings	17	34
4	Main Bowling Bridles	3	12
1	Main-garnet Fall	29	29
2	Pennants of the Main Tackles	4	4
10	Main Top-maſt Shrowds	7	70
2	Pennants of the Main Top-maſt Back-ſtays	7	14
2	Main Top-maſt ſtanding Back-ſtays	18	36
2	Pennants of the Main Top-ſail Braces	4	4
1	Main Top-maſt Breaſt-rope	$2\frac{1}{2}$	$2\frac{1}{2}$
2	Pennants of the Mizen Tackles	4	4
1	Mizen Jeer	12	12
1	Mizen Parrel-rope	3	3
56			367

8. *Cordage of* 3 *Inches* $\frac{2}{10}$ *Parts.*

1	Lanniard of the Fore-ſtay	5	5
10	Mizen Shrowds	8	80
11			85

9. *Cordage of* 4 *Inches* $\frac{4}{10}$ *Parts.*

1	Fore Halliards	30	30
3	Fore Parrel-ropes	8	8
1	Luff Hook-rope	7	7
2	Holſes for the Fore-yard	6	6
1	Fall of the Fore Top-maſt Top-rope	18	18
1	Main-garnet Guy	8	8
3	Main Parrel-ropes	9	9
2	Holſes for the Main-yard	8	8
1	Runner for the Main Top-ſail Halliards	14	14
1	Fall of the Main Top-rope	21	21
10	Main Top-maſt Puttocks	3	30
1	Mizen-ſtay	9	9
27			168

		Fa.	Fa.
	10. *Cordage of 4 Inches $\frac{8}{10}$ Parts.*		
2	Pennants of the Sprit-ſail Sheets	14	8
2	Fore-maſt runners of the Boats Tackles	13	26
2	Other Runners	12½	25
2	Fore Sheets	25	50
1	Fore Top-maſt Tie	6½	6½
2	Main-maſt Runners of the Boats Tackles	14	28
2	Other Runners	13	26
1	Main Top-maſt Stay	12½	12½
			182½
	11. *Cordage of 5 Inches $\frac{2}{10}$ Parts.*		
2	Fore Top-ſail Sheets	21	42
1	Lanniard of the Main Stay	8	8
1	Main Halliard	40	40
2	Main Jeers	25	50
2	Main Sheets	30	60
1	Pennant of the Main-garnet	5	5
1	Main Top-maſt Tie	8	8
1	Mizen Tie.	7	7
			220
	12. *Cordage of 5 Inches $\frac{6}{10}$ Parts.*		
1	Sling of the Sprit-ſail Yard	2	2
4	Pennants of the Fore Tackles	3½	14
16	Fore Shrouds	10	160
1	Fore Breſt Rope	2	2
1	Collar of the Fore-ſtay about the Bouſprit	3	3
1	Main Breſt-Rope	3	3
2	Main Top-ſail Sheets	24	48
			232
	13. *Cordage of 6 Inches of $\frac{1}{10}$ Parts.*		
8	Woldings for the Bouſprit	5	40
1	Fore-Tie	14	14
2	Fore-Tacks	12½	25
4	Pennants of the Main Tackles	4	16
20	Main Shrouds	11	220
1	Pennant of the Main Top-maſt Top-rope	6	6
			321
	14. *Cordage of 6 Inches $\frac{5}{10}$ Parts.*		
1	Main Tie	13	13
2	Main Tacks	15	30
			43

15. *Cordage*

15. *Cordage of* 10 *Inches* $\frac{1}{2}$ *Parts.*

	Fa.	*Fa.*
1 Fore-ſtay	12	12
1 Collar about the Stem	5	5
1 Pennant of the Main-winding Tackle	6	6
		23

16. *Cordage of* 14 *Inches.*

1 Main-ſtay	16	16

THe firſt thing we will begin withal, is, to find the *length* of the *Main-maſt* for any Ship whoſe *length* at the *Keel*, the *breadth* at the *Beam*, and the *depth* in *Hold* is known, which is done two ſeveral ways: The firſt, which is the moſt rational Way, is to add the *breadth* and *depth* of the Ship together; and double it, and divide the Product by 3, and the *Quotient* is the *length* of the *Main-maſt* in Yards. *Length of the Main-maſt*

Example, In the Ship we have propounded, the *breadth* $29\frac{1}{2}$, the *depth* 13 foot, thoſe two added is $42\frac{1}{2}$, the double of $42\frac{1}{2}$ is 85; that divided by 3, the *Quotient* is $28\frac{1}{3}$ Yards, that is 85 foot; but we have propounded our *Maſt* to be but 84 foot.

A ſecond way is thus; Add the length of the *Keel*, the breadth of the *Beam*, and the depth together, and to that Sum add the Difference between the breadth and twice the depth, and multiply the whole Sum by the breadth at the *Beam*, and the Product divide by the former whole Sum, and the Quotient is the length of the *Main-maſt* in Yards. *Example*, In the Ship we have propounded the length of the *Keel* to be 75 foot, the breadth of the *Beam* $29\frac{1}{2}$ foot, and the depth 13 foot, added together, the Sum is $117\frac{1}{2}$, unto which add the Difference between twice the depth 26, and the breadth $29\frac{1}{2}$, which divided by 121 the former whole Sum, the Quotient is $29\frac{1}{2}$ Yards, which is a Yard more and better than it was the other way: But it is too long, and therefore we commend the firſt Way for the more rational Way, and do perſwade thoſe that have occaſion to make uſe of that way.

New

Now having found the length of the *Main-Maſt* in this manner for any *Ship*, we have ſet down a *Table* of the *lengths* and *thickneſs* of all the *Maſts* and *Yards* of the *Ship* we have propounded, by means whereof, after the *length* and *thickneſs* at the Partners of the *Main Maſt* for any *Ship* is found, the *lengths* and *thickneſs* of all the other *Maſts* and *Yards* may be found out by our *Table*, as followeth: Suppoſe a *Ship* 63 foot by the *Keel*, 25 foot at the *Beam*, and 11 foot deep in *Hold*; we deſire to know the *length* and *thickneſs* of all the *Maſts* and *Yards*; and firſt for the *Main Maſt*, the *breadth* at *Beam* 25 foot, the *depth* 11 foot, their Sum 36, their double 72, which divided by 3, the *Quotient* is 24 *Yards*, the *length* of the *Main Maſt*, which is 72 foot. To find the *lengths* and *thickneſs* of all the other, you may do it by the *Rule of Three*, the *lengths* in feet, and the *thickneſs* in Inches, and the Proportion is from the *lengths* and *thickneſs* of the *Maſts* and *Yards*, for they are but a lienal Proportion: That is,

As 84, the length of our *Main Maſt* in the Table, is to 72 the *length* of the *Main Maſt* found; ſo is 28 the *thickneſs* of our *Main Maſt* in the Table to 24, the *thickneſs* of the *Main Maſt* found at the Partners: The *thickneſs* of the *Diameter* at the *Houns* muſt be $\frac{2}{3}$ of that which is at the Partners, which in this is 16 Inches *thickneſs* or *diameter*. Or this Proportion of the *lengths* of the *Maſts* may be abbreviated, for it is as 7 to 6, ſo is 28 to 24; and ſo we proceed to find all the reſt, as 7 to 6, ſo is 75 our *Fore Maſt* to 74, the *length* of the *Fore Maſt* required; and ſo we may proceed for all the other *lengths* and *thickneſs*, both of the *Maſts* and *Yards*: But becauſe this is ſomewhat troubleſome, and every one is not able to work the *Rule of Three* in Numbers, we have conſidered of a more eaſy and ſpeedy way for the performing of it, which is by an opening *Scale*, having two Lines drawn, one on each ſide from the *Center*, each Line divided into 150 parts, and each part into two parts; whoſe uſe is thus, take 72 from the *Center* on one ſide of the *Scale* in your *Compaſſes*, the *length* of the *Main Maſt* found and put it over in 84, and 84 the length of our *Main Maſt* in the *Table*; and keeping the *Scale* ſtill at the ſame diſtance without altering it, take the diſtance over with your

Compaſſes

Compaſſes between 28 and 28 the *thickneſs* of our *Main-maſt* in the Table, and meaſure it on the ſide of the *Scale* from the Center, and it will end in 24, the *thickneſs* of the *Maſt* ſought, and take it over in 75 the *length* of our *Fore-maſt*, and it will end in 64 the *length* of the *Fore-maſt* required; and take it over in 25, the *thickneſs* of our *Fore-maſt*, and it will end in 21 ½, the *thickneſs* of the *Fore-maſt* required; and in 74 the *length* of the *Main-yard* in the Tables, and it will end in 63, the *length* of the *Main-yard* required; and in 24 for the *thickneſs*, and it will end in 21, the *thickneſs* required: and ſo proceed for all the reſt of the *lengths* and *thickneſs* without altering the *Scale*, and you ſhall find 56 the length of the *Bowſprit*, and 19 in *thickneſs*, and 53 the *length* of the *Fore-yard*, and 17 ½ the thickneſs and 44 the *length* of the *Mizen-yard*, and 13 *thickneſs*, and 45 the *length* of the *Mizen-maſt*, and 15 the *thickneſs*, and 43 the *length* of the *Sprit-ſail-yard*, and 14 the *thickneſs*, and 36 the *lenght* of the *Main Top-maſt*, and 12 the *thickneſs*, and 31 ½ the length of the *Fore Top-maſt*, and 11 the *thickneſs*, and 31 the *length* of the *Main Top-ſail*, and *Croſs-jack-yards*, and 9 the *thickneſs* of the *Main Top-ſail-yard*, and 6 ½ the *thickneſs* of the *Croſs-jack-yard*, and 27 the *length* of the *Fore Top-ſail-yard*, and 7 ½ the *thickneſs*, and 23 ½ the *length* of the *Mizen Top-Maſt*, and 6 ½ the *thickneſs*, and 18 ½ the *length* of the *Main Top-gallant-maſt*, and 6 the *thickneſs*, and 17 ½ the *length* of the *Mizen Top-ſail-yard*, and 4 ½ the *thickneſs*, and 17 the *length* of the *Fore Top-gallant Maſt*, and 5 the *thickneſs*, and 16 the *length* of the *Main Top-gallant-yard*, and 5 the *thickneſs*, and 14 ½ the *length* of the *Fore Top-gallant-yard*, and 14 ¼ the *thickneſs*, and 14 ½ the *length* of the *Sprit-ſail Top-maſt*, and 4 ½ the *thickneſs*, and 12 the *length* of the *Sprit-ſail Top-ſail-yard*, and 3 ½ the *thickneſs*. By this means we have performed the finding the *lengths* and *thickneſs* of all the *Maſts* and *Yards* belonging to our ſuppoſed Ship; of 63 foot by the *Keel*, 25 foot by the *Beam*, and 11 foot deep in *Hold*, with wonderful Eaſe and Speed, very exactly. And now we will go forwards, firſt, to find the Sizes of our *Rigging*; ſecondly, to find the quantity of Rope of each Size that will ſerve our turn to *Rig* the Ship compleatly; and thirdly, to find the length of each Rope that we ſhall have occaſion

to

to make use of in *Rigging*: all which shall be performed with as much Ease and Speed as the former was for the *Masts* and *Yards*, (Number for Number.) Here note by the way, that we could have given the *lengths* of all the *Masts* and *Yards* by Proportions from the length of the *Main Mast*, and so from one to another; but because our Way that we have propounded is far more easy and speedy in performance, I rather make use of it than of the other way.

Now first for the Sizes of our *Rigging*, we are to consider that it is but a lineal Proportion between the Diameter of the *Main Mast* in our Table, and the Diameter of the *Mast* found; which Proportion is, being abbreviated, as 7 to 6, so is one Inch one tenth part the smallest *Cordage* in our Table, to nine tenths of one Inch our smallest *Cordage* for our supposed Ship of 63 Foot by the *Keel*: And here we are to note, that it is the Circumference of the *Cordage* that we find, all which is performed without altering the Scale; but let it remain at the same opening it was at, to find the *lengths* and *thickness* of the *Masts* and *Yards*. As for the smallest *Cordage* of one Inch, and one tenth Part, take the Distance over between 11 and 11, which measured from the Center, will end in 9, and more almost one half, which is 9 tenths of one Inch, and then put it over in 13, and 13 for our second size *Cordage* of one Inch and $\frac{3}{10}$ in our Table, which measured from the Center, will end in 11, which is one Inch, and one tenth Part for our second Size for our supposed Ship; and so proceeding on the same manner for all the rest of our Sizes, taking for one Inch and $\frac{8}{10}$ Parts 18, and for two Inches and $\frac{3}{10}$ Parts 22, and for two Inches $\frac{6}{10}$ Parts 26, and for 3 Inches $\frac{1}{10}$ Part 31; and so in like manner for all the rest, and taking for 14 Inches 140.

But here it may be objected, that the greatest *Cordage* in our Table is but 14 Inches, and the extent of our Scale is but to 150; how then shall we do if we were to fit a Ship, whose Size of *Cordage* would go beyond the end of our Scale? To which I answer, it may be done three Ways.

First, it may be done by the *Rule of Three* in Numbers; or else,

Secondly, (which is more pertinent to our Way of performing) by the Scale, which is thus; I have a Ship to be *rigg'd*, the *thickness* of whose *Main Mast* at the Partners is 35 Inches, I demand

mand the size of the *Main Stay*: the size of the *Main Stay* in our Tables is but 14 Inches, this that we seek for must be more, the proportion between the thickness of the *Masts* is as 28 to 35, which is as 4 to 5. In this case, because our Scale goes but 150, we take the distance over between 70 and 70, which is half the size of our *Main Stay*, and measure it from the Center, and it will end in 87 and an half, that is half the Circumference of the *Main Stay* required; which being doubled is 175, that is 17 inches and one half the Circumference of the *Main Stay* required.

A third Way by the Scale; We may take the distance over between 14 and 14, as the Scale is numbred; which measur'd from the Center, will end in $17\frac{1}{2}$, the size of our *Main Stay* required.

But to go forwards to find the rest of the sizes of the *Cordage* for our supposed Ship of 63 foot by the *Keel*.

For our *Cordage* of one Inch $\frac{8}{10}$ in our Table, we shall find by the Scale 1 Inch $\frac{6}{10}$ parts; and for 2 Inches $\frac{1}{10}$ parts, we shall find 2 Inches $\frac{6}{10}$ parts; and for 2 Inches $\frac{6}{10}$, we shall find 2 Inches $\frac{3}{10}$ parts; and for 3 Inches $\frac{1}{10}$, we shall find 2 Inches $\frac{6}{10}$ parts; and for three Inches $\frac{1}{10}$, we shall find three Inches $\frac{8}{10}$ parts; and for three Inches $\frac{9}{10}$, we shall find three Inches $\frac{4}{10}$; and for four Inches $\frac{4}{10}$ parts, we shall find three Inches $\frac{9}{10}$; and for four Inches $\frac{8}{10}$ parts, we shall find four Inches $\frac{1}{10}$ parts; and for five Inches $\frac{2}{10}$ parts, we shall find four Inches $\frac{4}{10}$ parts; and for five Inches $\frac{6}{10}$ parts, we shall find four Inches $\frac{8}{10}$ parts; and for six Inches $\frac{1}{10}$ parts, we shall find five Inches $\frac{2}{10}$ parts; and for six Inches $\frac{5}{10}$ parts, we shall find five Inches $\frac{6}{10}$ parts; and for ten Inches $\frac{5}{10}$ parts, we shall find nine Inches $\frac{8}{10}$ parts; and for fourteen Inches we shall find twelve Inches $\frac{0}{10}$ parts. So now we have sized all our *Cordage* for our supposed Ship of 63 foot by the *Keel*, for *Rigging* proportionable to the sizes of the *Cordage* in our Table.

The second thing concerning the *Cordage*, is to find what quantity of each size will serve to Rigg our supposed Ship of 63 foot by the *Keel*. You may see in our Table we have set down the Sum of the number of Fathoms of each size at the end or Conclusion of the size; as for the first size of 1 Inch and one tenth part, the Sum is 232 Fathoms: but because this num-

ber is greater than the length of our Scale, we take the tenth part of it, and ſo we take it over between 23 $\frac{1}{4}$ and 23$\frac{1}{4}$, the Scale remaining ſtill at the ſame Angle, or opening it as it was at the firſt, and meaſuring it from the Center, it will end in very near 20; which being again increaſed or multiplied by 10, it will be 200 Fathom for the Cordage of the leaſt ſize, to rig our ſuppoſed Ship compleatly.

For our ſecond ſize, which in our Table is 691 Fathom, we ſhall find 59, which is 590 Fathom; and for our third ſize, which is in the Table 351 Fathom, we ſhall find 30, which is 300 Fathom; and for our fourth ſize, which is in the Table 838 Fathom, we ſhall find 71$\frac{1}{2}$, which is 715 Fathom: and for our fifth ſize, which is in the Table 728 Fathom, we ſhall find 62$\frac{1}{2}$, which is 625 Fathom: and for our ſixth ſize, which is in the Table 764 Fathom, we ſhall find 65$\frac{1}{2}$, which is 655 Fathom: and for our ſeventh ſize, which is in the Table 367 Fathom, we ſhall find 31$\frac{1}{2}$, which is 315 Fathom: and for our eighth ſize, which is in the Table 85 Fathom, we ſhall find 72, which is 72 Fathom: and for our ninth ſize, which is in the Tables 168 Fathom, we ſhall find 14$\frac{1}{2}$, which is 145 Fathom: and for our tenth ſize, which is in the Tables 182 Fathom, we ſhall find 15$\frac{1}{2}$, which is 155 Fathom: and for our eleventh ſize, which is in the Tables 220 Fathom, we ſhall find 19, which is 190 Fathom: and for our twelfth ſize, which is in the Tables 232 Fathom, we ſhall find 20, which is 200 Fathom: and for our thirteenth ſize, which is in the Tables 321, we ſhall find 27$\frac{1}{2}$, which is 275 Fathom: and for our fourteenth ſize, which is in the Tables 43 Fathom, we ſhall find 37, which is 37 Fathom: and for our fifteenth ſize, which is in the Tables 23 Fathom, we ſhall find 20, which is 20 Fathom: and for our laſt ſize, which is in the Tables 16 Fathom, we ſhall find 14 Fathom.

But here it will be objected, That in our Tables we have put down too much Variety of *Rigging*, and that there is not ſo much required for every ordinary Ship: For anſwer whereunto, and what Courſe to take where any Man is not diſpoſed to have his Ship ſo compleatly rigged as we have propounded, go to the Tables, and take out the Numbers that are againſt the *Cordage* of every ſize that you intend to make uſe of, and add theſe Numbers together; then take over the diſtance in your Compaſſes from the

Scale

Scale of the whole Sum, or the tenth part, as you have occaſion, as is before directed, and meaſure it from the Center, and you ſhall ſee the number of Fathoms required of that ſize, altho you rigg not your Ship ſo compleatly as we have propounded; always remembring the Scale muſt remain ſtill at the ſame opening as was at the firſt.

Example.

Suppoſe our ſuppoſed Ship of 63 foot by the *Keel*, it being Winter, ſhould not be rigged with *Top-gallant Maſts*, nor with *Mizen* nor *Sprit-ſail Top-Maſts*, then we would know how many Fathom of our fourth ſize *Cordage* will ſerve our turn: we go to our Table of 2 Inches $\frac{3}{10}$ parts, and take out the number againſt all the other *Cordage*, (leaving out that which is for the *Top-gallant Maſts*, and the *Mizen* and *Sprit-ſail Top-Maſts*) and add them together, and the Sum is 590, of which I take the tenth part, which is 59. Then I take over the diſtance with my Compaſſes upon the Scale, between 59 and 59, and meaſure it from the Center, and it ends in $50\frac{1}{2}$, which is 505 Fathom of *Cordage* of our fourth ſize of one Inch $\frac{9}{10}$ parts; which was the ſixth ſize we found for 2 Inches $\frac{3}{10}$ parts, as you may ſee before.

Now to proceed to find each particular Cord's length, there is no more difficulty in it than there was in the finding of the whole number of Fathoms of each ſize. But for the better explaining of it, we will ſet down ſome Examples of ſome Cords, that the reſt may be found by them without any ſcruple.

Example.

We deſire to know the length of our *Main Top ſail Braces*, for our ſuppoſed Ship of 63 foot by the *Keel*: looking in our Table we find them in our third ſize of 1 Inch $\frac{8}{10}$ parts, and their length double is 45 Fathom (note, in our Table every Cord that is double is put down ſingle and double with *Fa.* at the top of each ſignifying Fathoms); ſo I take over the diſtance with the Compaſſes upon the Scale over between 48 and 48; which meaſured from the Center, ſhall end in 41; that is 41 Fathom for the length of our *Main Top-ſail Braces* double, for our ſuppoſed Ship of 63 foot by the *Keel*: and ſo if we look for our *Fore-Top-ſail Liſts*, we ſhall find them to be in our Table of *Cordage* of 2 Inches $\frac{3}{10}$ parts, 36 Fathom; and for our ſuppoſed Ship we ſhall find them to be 31

Fathom: and for our *Top-ſail Clue-lines* in our Table of 2 Inches $\frac{6}{10}$ parts, we ſhall find 60 Fathom, which for our ſuppoſed Ship we ſhall find to be 51 Fathoms; and for our *Fore-Lifts*, which in our Table is 40 Fathom, we ſhall find them for our ſuppoſed Ship to be by our Scale 34 Fathom: and for our *Main Top-ſail Halliards*, in our Table we ſhall find 44 Fathom, which for our ſuppoſed Ship by our Scale we ſhall find to be 37 Fathom: and for our *Main Bowlings* in our Table is 24 Fathom, which we ſhall find by our Scale to be 29 Fathom: and for our *Fore Halliards*, in our Table is 30 Fathom, which we ſhall find by our Scale to be 26 Fathom.

Thus we have exemplified in the finding of the lengths of ſome particular Cords, which is Inſtruction ſufficient for the finding of the lengths of all the reſt; and ſo we ſuppoſe we have performed all that we promiſed to perform with eaſe and ſpeed by a Scale, for the compleat rigging of any Ship: And now we will proceed to ſet down ſome other Proviſions and Cordage that are neceſſarily required in a Ship, and ſo will conclude this Tract.

A Table of ſome other Cords and Ropes that are of neceſſity in a Ship, and are here put down for their Lengths and Sizes, according to our former Table of Cordage for our propounded Ship.

	Fat	Fi.
2 Stoppers at the Bitts of 5 Inches	4	8
2 Lanniards of 2 Inches	5	10
2 Stoppers at the Bough of $3\frac{1}{2}$ Inches	6	12
4 Shank Panters of $3\frac{1}{2}$ Inches	$2\frac{1}{2}$	10
1 Shank Panter for the Stream Anchor 3 Inches	$2\frac{1}{2}$	$2\frac{1}{2}$
1 Stopper for it of 3 Inches	$2\frac{1}{2}$	$2\frac{1}{2}$
2 Can-Buoy Ropes of $\frac{3}{4}$ Inches	50	100
For Robins and Earings of $1\frac{1}{2}$ Inch, 1 ſmall Coil.		
4 Lead Lines		
2 Cat-Ropes of 3 Inches	$2\frac{1}{2}$	5
1 Pennant of the Fiſh-Tackle $4\frac{1}{2}$ Inches	4	4
1 Fall of the Fiſh-Tackle 2 Inches	12	12
1 Long-Boat's David's Seazing 3 Inches	2	2
1 Long-Boat's Panter 4 Inches	3	3

1 Pin-

1	Pinneſs's David's Seazing $2\frac{1}{2}$ Inches	2	2
1	Pinneſs's Panter 3 Inches	3	3
1	Jellewats Panter 2 Inches	2	2
	Hoſſes for the Head 3 Inches	4	4
1	Ladder for the Bowſprit $2\frac{1}{2}$ Inches	8	8
	Lanniards of 1 Inch	4	4
1	Buoy Rope for the Stream Anchor 3 Inches	9	9
1	Buoy Roap for the Kedg Anchor 2 Inches	9	9
2	Pair of Butt-Slings 3 Inches	2	2
2	Pair of Hogs-head Slings 2 Inches	2	2
1	Ladder for the Poop 3 Inches	8	8
6	Winding Tackle Blocks		
3	Buoy Ropes of 4 Inches	10	30
	For new Bolt Rope 4 Inch Cablet,		
	A Gueſs Rope 3 Inch Cablet,		
	Cackling of $2\frac{1}{2}$ or 3 Inches.		

50

YOu are to take notice, that theſe Cords and Ropes are ſized, and their lengths are proportioned according to our Ship that we have propounded of 75 foot by the *Keel*, for which our former Tables are made. Now it remains that we ſpeak ſomewhat of the ſizing of Cables.

Your *Sheat Cable* is commonly ſo many half Inches about as your Ship is broad in feet at the Mid-Ship Beam.

Now our propounded Ship, to which our Tables are made, is $29\frac{1}{2}$ foot at the Mid-Ship Beam, therefore the Sheat Cable muſt be 15 Inches about: and to find the ſizes of the reſt of your Cables, you may do it by the weight of your Anchor in this manner.

Suppoſe your Sheat Anchor be 15 hundred weight, and your Cable 12 Inches; and you have another Anchor 9 hundred weight, you deſire the ſize of your Cable for it.

For the Anſwer to this and the like Demands, I have cauſed two Lines to be put down on the ſide of the Scale; the one of equal parts containing 385 parts, and the tenths and fives drawn out, and it is numbred at every 50 thus, 50, 100, 150, *&c.* The other Line of unequal parts begins at 1, and ends at $27\frac{7}{10}$, and is numbred to every unite, and each unite is divided from 5 to

10

10 by fives, from 10 to $27\frac{7}{10}$ by tens, each unite into ten parts.

First, I take 9 upon the opening the Scale from the Center, the weight of the second Anchor, and put it over in 15; and 15, the weight of the first Anchor; and keeping the Scale so, I look against 12 in the unequal parts, and in the equal parts against it are 72. Then I take the distance over upon the opening Scale between 72 and 72, and measure it from the Center, and it ends in $43\frac{1}{2}$. Lastly, I look $43\frac{1}{2}$ in the equal parts, and against it in the unequal parts is $9\frac{3}{10}$, that is $9\frac{3}{10}$ Inches the Circumference of the Cable for the Anchor of 900 weight, which was required.

Otherwise the Cables may be proportioned from the Burden of the Ships, in this manner.

Suppose that a Ship of 300 Tun hath a Sheat-Cable of 15 Inches about, what shall be the Circumference about of the Sheat Cable of a Ship of 115 Tun? Here because the greater number of Tuns is more than is upon our Scale, we take one quarter of 300, which is 75, and one quarter of 115, which is 29 nearest, and the Proportion is all one: So I take 29 from the Center, and put it over in 75 and 75, and so keep the Scale. Next I look against 15 in the unequal parts, and against it in the equal parts $112\frac{1}{2}$; then I take over the distance between $112\frac{1}{2}$ and $112\frac{1}{2}$, and measure it from the Center, and it ends in $43\frac{1}{2}$; then I look against $43\frac{1}{2}$, and in the unequal parts against it are $9\frac{3}{10}$, that is $9\frac{3}{10}$ Inches, the Circumference about of a Sheat Cable for a Ship of 115 Tun, according to the former Supposition, and as it was found before: and so the sizes of all the rest of the Cables, may be found from one Ship to another after the same manner.

It may be objected, That the *Stays* of the *Middle Masts* may fail to hold in proportion according to the lengths of the *middle Masts* in all Ships, because the distance between the *Main-Mast* and *Fore-mast* may not be proportionable in all Ships according to their lengths. We suppose it to be so, yet our Scale performs it exactly.

Example.

In our propounded Ship of 75 foot by the *Keel*, the *Main-mast* 84 foot, the depth in *Hold* 12 foot, and 5 foot between *Decks*, is

is 18 foot; which ſubtracted out of 84, reſts 66 foot, the height of the *Maſts* above the *Decks*: now commonly the diſtance between the *Main-maſt* and *Fore-maſt* is $\frac{1}{7}$ of the length of the Ship's *Keel*, which in this Ship that we have propounded is 45 foot (and the diſtance of the *Mizen-maſt* from the *Main-maſt* is half as much as the diſtance between the *Main-maſt* and *Fore-maſt*.) But to proceed and keep our ſelves within the compaſs of our Scale, we reduce the height of the *Maſt* above the *Decks*, and the diſtance between the *Main-maſt* and *Fore-maſt* into yards, and the one is 22 and the other is 15 yards; theſe two I ſeek in the line of unequal parts, and againſt 22 there is in the equal parts 242, and againſt 15 is $112\frac{1}{2}$; theſe two I add together, and their Sum is $354\frac{1}{2}$, which I ſeek in the Line of equal parts; and againſt it in the unequal parts is $26\frac{6}{10}$ yards, that is $26\frac{6}{10}$ yards the length of the *Main-ſtay* beſides the *Collar*.

If it happen that the equal parts that belong to the height of the *Mainmaſt* above the *Decks*, and the diſtance between the *Main-maſt* and the *Fore maſt* added together, be above 385, then take the half of each in yards, and double the length you find, and that ſhall be the length of the *Main-ſtay* in yards.

Example.

The diſtance between the *Main-maſt* and *Fore-maſt* is 15 yards; for which we take half, which is $7\frac{1}{2}$; againſt which of the unequal parts, in the equal parts, is 28; and for the height of the *Main-maſt* above the *Decks* being 22 yards, we take 11, againſt which of the unequal parts in the equal parts is $60\frac{1}{2}$; which added to 28 is $88\frac{1}{2}$; which I look in the equal parts, and againſt it in the unequal parts is $13\frac{3}{10}$, which being doubled is $26\frac{6}{10}$, that is $26\frac{6}{10}$ yards, for the length of the *Main-ſtay* beſides the *Collar*, as it was found before.

Thus we have finiſhed what was intended for this buſineſs of *Maſting*, *Yarding* and *Rigging* of any Ship whatſoever. But becauſe our *Boat-Swain* ſhall be compleat according to our Title, we ſhall further ſhew by our Scale to find the weight of the *Cordage* (of each ſize that ſhall ſerve to *Rigg* any Ship whatſoever) as we will exemplifie it by the *Cordage* of our ſuppoſed Ship of 63 foot by the *Keel*: Firſt, we are to take notice, that in all our *Cordage* under $2\frac{6}{10}$ Inches, we are to look the ſize in the unequal parts, and make it ten times as much as it is; as for one inch and $\frac{5}{10}$ parts to look 15,

and

and to take half the number of equal parts againſt it, as againſt 15 is $112\frac{1}{2}$, the half is $56\frac{1}{2}$, and always take 50 from the Center, and put it over in the ſaid half of the equal parts; then take the diſtance over in $87\frac{1}{2}$ and $87\frac{1}{2}$, and meaſure it from the Center, and that ſhall be the number of Fathoms of that *Cordage* that weighs one quarter of one hundred weight.

Example of our third ſize for our ſuppoſed Ship of 63 foot by the *Keel*, which ſize is 1 inch $\frac{6}{10}$ parts, taking it for 16, as is before ſaid; and looking it in the unequal parts, there is againſt it in the equal parts 228, the half is 64. Then I put over 50 in 64, and take the diſtance over in $87\frac{1}{2}$ and $87\frac{1}{2}$, and meaſure it from the Center, and it ends in 68, that is 68 Fathom of that *Cordage* to weigh one quarter of an hundred weight: ſo then I take 28 from the Center, the number of pounds in one quarter of a hundred, and put it over in 68, then I take the diſtance over between 30 and 30 the tenth part of the Sum of the *Cordage* of the third ſize, and meaſure it from the Center, and it ends in $12\frac{1}{3}$, which multiplied by 10 is 123 pound, the weight of 300 Fathom of our *Cordage* of 1 inch $\frac{6}{10}$ parts, which is our third ſize.

For *Cordage* between $2\frac{6}{10}$ inches and 5 inches, take the one half of the ſize, and do with the half as in the laſt, only at the laſt take the diſtance between $43\frac{3}{4}$ and $43\frac{3}{4}$, and meaſure it from the Center, which ſhall be the number of Fathoms in half 100 weight; or if you take it between $87\frac{1}{2}$ and $87\frac{1}{2}$, it ſhall be the number of Fathoms in one hundred weight.

Example of our ſeventh ſize *Cordage* for our ſuppos'd Ship, which is 3 inches, the half is 1 inch $\frac{1}{10}$ parts, for which we look 15 in the unequal, and in the equal parts againſt it $112\frac{1}{2}$, the half is $56\frac{1}{2}$; ſo I put over 50 in $56\frac{1}{2}$, and take the diſtance between $43\frac{3}{4}$ and $43\frac{3}{4}$, which meaſur'd from the Center ſhall end in 39, that is 39 Fathom to weigh half 100 weight of 3 inch *Cordage*: ſo I put over 20 for two quarters in 39, and then I take the diſtance over between $31\frac{1}{2}$ and $31\frac{1}{2}$ for 315 Fathom, the whole Sum of that *Cordage*; which meaſur'd from the Center, ſhall end in 16, that is 16 quarters of 100 weight, that is 400 weight for the quantity of that *Cordage*. For *Cordage* above five inches, to find the weight and whole quantity of that, we muſt ſeek the ſize of that in the unequal parts, as it is, and take the

equal

equal againſt it, and put over 20 in it; then take the diſtance between $87\frac{1}{2}$ and $87\frac{1}{2}$, and meaſure it from the Center, and it ſhall end in the number of Fathoms that weigheth one half hundred weight.

Example of our Fifth Size, which is 9 inches, and is 20 Fathom; againſt 9 of the unequal parts in the equal parts, is $40\frac{1}{2}$; I put over 20 in $40\frac{1}{2}$, and take the diſtance between $87\frac{1}{2}$ and $87\frac{1}{2}$, which meaſured from the Center, ends in 43, that is 4 Fathom and $\frac{31}{100}$ of that *Cordage* to weigh half one hundred weight: Then I put over 20 for two quarters in 43, and take the diſtance over between 20 and 20, the number of Fathoms of that ſize; and meaſure it from the Center, and it ends in $9\frac{1}{3}$, that is 9 quarters and one third part, or two hundred, one quarter, and nine pound for the whole quantity of that *Cordage*. This which is exemplified in theſe three Particulars is ſufficient Inſtruction for all the reſt. And now having made (in regard of Inſtruction) our *Boat-Swain* compleat, we leave it to his Practice, and ſo conclude.

POSTSCRIPT.

WHereas ſome Object againſt theſe Rules by way of Proportion, ſaying they cannot hold: For Anſwer to this, I ſay, That all the Cordage that belongs to the Maſts, ſhall hold in Proportion according to the length of the Maſts above the firſt Deck. And for the Cordage that belongs to the Yards, if the Yards be longer or ſhorter than a Proportion given, firſt find the length of the Cordage belonging to the Yards, *according to the Proportion given: then as the length of the Yard, according to the Proportion given, is to the length of the Yard you would have your Cordage for; ſo is the length of each particular Cordage found (according to the Proportion given) to the length of the Cordage for the Yard you deſire to have it.*

For the Weight of Anchors and Cables, they are ſuch things as are Arbitrary, left to the Diſcretion of the Maſter, or other that hath to do in the Buſineſs, according as they find the Built of the Ship to be: And the like Arbitrary it is in the Sizes of ſome of the Cordage and Ground Tackle.

Henry Bond.

A Plain and Easie Rule *to* Rigge *any* SHIP *by the Length of his* Masts *and* Yards, *without any further Trouble.*

For the Spritsail-Yard.

Halliards THree times the length of the Yard.
Lifts Three times the length of the Yard.
Clulines Two times the length of the Yard.
Braces Two times the length of the Fore-yard.
Buntlines Two times the length of the Yard.
Sheets Three times the length of the Yard.
Pennants One third of the Yard.

For the Spritsail-Top-mast.

Shroudes Most be the length of the Mast from the Heel to the Crostrees.
Halliards Three times the length of the Mast.
Lifts Three times the length of the mast.

*Cluline*s

Clulines Two times the length of the Spritſail Yard.

Braces Two times the length of the Spritſail Yard.

Cranlines Two times the length of the Topſail yard.

For the Fore-Maſt.

Pennants $\frac{1}{3}$ of the length of the Shroudes.

Shroudes Two thirds of the maſt.

Stay One time the length of the maſt wanting one ſixth.

Lifts Three times the length of the Shroudes.

Clugarnets Three times the length of the Shroudes.

Buntlines Two times the length of the Maſt from the Deck to the Croſtrees.

Leechlines Two times the length of the Main yard.

Braces Two times the length of the Main yard.

Foreſheets 2 & $\frac{1}{2}$ times the length of the main Yard.

Jeers Four times the length of the Maſt from the Deck to the Croſtrees.

Buntlines Two times the length of the main yard.

Topſail-ſheets Two times the length of Main yard.

The Fore-Top-Maſt Rigging.

Pennants $\frac{1}{3}$ of the Shroudes.

Shroudes One time the length of the Maſt from the Croſtrees to the feed hole.

Burtons One time the length of the Foreyard.

Lifts 2 and ½ times the length of the Foreyard.

Clulines Three times the length of the Foreyard.

Braces 2 & ⅓ times the length of the Foreyard.

Bowlines 2 & ½ times the length of the Foreyard.

Leechline Two times the length of the Foretopſail Yard.

Tye One time the length of the Topmaſt.

Runner 1 & ⅓ time the length of the Foreyard.

Halliards Three times the length of the Foreyard.

Stay 1 & ⅓ times the length of the Maſt.

Back-ſtays 1 & ⅓ times the length of the Foreyard.

Buntlines Two times the length of the Foreyard.

The Fore-Top-gallant-Rigging.

Shroudes One time the length of the Maſt from the Croſtrees to the feed hole.

Stay 1 & ½ times the length of the Foreyard.

Lifts Three times the length of the Maſt.

Braces 2 & ½ times the length of the Foreyard.

Bowlines 2 & ½ times the length of the Foreyard.

Halliards 2 & ½ times the length of the Foreyard.

For the Main-Maſt-Rigging:

Pennants ⅓ ~~of~~ the Shroudes. *Shroudes*

Shroudes Two thirds of the Maſt.
Stay The length of the Maſt.
Jeers Four times the length of the Maſt from the Deck to the Croſtrees.
Lifts Three times the length of the Main yard.
Braces 2 & ½ times the length of the Main yard.
Bowlines One time the length of the Main yard.
Clugarnet 2 & ½ times the length of the Main yard.
Buntlines Four times the length of the Maſt for Falls and Leges.
Leechlines Two times the length of the Main yard.
Tacks One time the length of the Main yard.
Runners One time the length of the Main yard.
Tacklefals Three times the length of the Runners.
Sheets 2 & ½ the length of the Main yard.
Eknave-line. Two times the length from the Croſs-trees to the Deck.
Topſail-ſheets Two times the length of Main yard.

The Main-Top-Maſt Rigging.

Pennants ⅓ of the Shrouds
Shroudes One time the length of the maſt.
Stay 1 & ½ time the length of the maſt.
Braces 2 & ⅓ the length of the Yard.
Burtons ⅓ Of the main Yard.
Lifts 2 & ½ of the length of the main Yard.

Bunt-

Buntlines Two times the length of the main Yard.
Clulines Three times the length of the Main yard.
Tye One time the length of top-maſt Shroud.
Runners One time the length of the Main yard.
Halliards Three times the length of the mainyard.
Leechline Two times the length of the topſail Yard.
Buntlines Two times the length from the Deck to the Hounds.
Top-rope One time the length of the Main ſhrouds.
Topropefal Two times the length of the main maſt.
Pennants One third of the topſail yard.
For Braces
Backſtays 1 & ½ the length of the main Yard.

The Main-Top-gallant-Maſt-Rigging

Shroudes Once the length of the Maſt from the the Croſs-trees to the heel.
Stay 1 & ½ the length of the Main yard.
Lifts Three times the length of the top-gallant Maſt
Braces Two times the length of the main yard.
Bowlines 2 times the length of the main yard.
Tye The length of the maſt.
Halliards 2 & ½ times the length of the main yard.
Top-rope Two times the length of the main yard.

Rigging for the Mizoen Maſt.

Halliards Four times the length of the maſt from the Deck to the Croſs-trees.

Braytles Two times the length of the maſt from the Deck to the Croſs-trees.

Sheet One time the length of the Yard.

Tack Three Fathomes length.

Shroudes One time the length of the Maſt from the Deck to the Croſtrees.

Pennants One third of the Shroud.

Burtenſal One time the length of the main yard.

Stay One time the length of the Maſt.

Bowlines One time the length of the *croſsjack* Yard.

Rigging for the Mizoen-Top-Maſt.

Pennants One Third of the Shroud.

Shroudes The length of the Maſt from Croſs-trees to the Heel

Stay One and half the length of the Maſt.

Lifts Three times the length of the Maſt.

Braces One and one third the length of the Mizoen yard

Bowlines One and half the length of the *Croſsjack* yard.

Croſsjack-Braces 2 & half the length of the *Croſsjack* yard.

Sheets Two and half the length of the *Croſsjack* yard.

Clulines Two and half the length of the *Croſsjack* yard.

Halliards One and half the length of the Mizoen yard.

Tye One time the length of the Top-Maſt from the Croſs-trees to the Heel.

FINIS.